WHAT IS CLAIMED IS:

1. A method for analyzing calibration of a laser ablation system for performing an ablation procedure on an eye, the method comprising:

selectively ablating a test surface with the laser system;

directing light from a light source through the test surface; and

analyzing the light, after the light has passed through the test surface, to determine a refractive power of the test surface and at least one additional ablation characteristic of the laser ablation system.

2. A method as in claim 1, wherein the test surface is disposed along a treatment plane, the treatment plane comprising a plane to which a laser is directed from the laser system to perform the ablation procedure, and wherein the light is directed from the light source to the treatment plane through the test surface.

3. A method as in claim 2, wherein the light is analyzed with at least one calibration device.

4. A method as in claim 2, wherein the test surface is fixedly positioned in the treatment plane during ablating, directing and analyzing.

5. A method as in claim 4, further comprising moving the test surface into the treatment plane before the ablating step.

6. A method as in claim 5, wherein moving the test surface comprises moving a platform to which the test surface is coupled.

7. A method as in claim 1, wherein the test surface is ablated into a lens.

8. A method as in claim 1, wherein the test surface comprises a plastic calibration member.

9. A method as in claim 1, wherein selectively ablating comprises applying laser energy to the test surface to approximate at least one procedure selected from a group consisting of astigmatic correction of a human eye, myopic correction of a human eye, hyperopic correction of a human eye, and a phototherapeutic flat.

10. A method as in claim 1, wherein analyzing comprises using at least one wavefront sensor to analyze the light.

11. A method as in claim 10, wherein the wavefront sensor is selected from the group consisting of a Hartmann-Shack sensor, a Tscherning sensor, a ray tracing sensor, a shearing interferometer sensor, an amplitude grating sensor, and a pattern distortion measuring apparatus.

12. A method as in claim 10, wherein analyzing comprises determining at least one of a quality and a shape of the ablated test surface.

13. A method as in claim 12, wherein analyzing the quality of the ablated test surface comprises detecting at least one high-order aberration or artifact on the test surface.

14. A method as in claim 13, wherein analyzing the quality further comprises determining a height of the at least one high-order aberration or artifact on the test surface.

15. A method as in claim 13, further comprising generating at least one map of the test surface, the map showing a location the at least one high-order aberration or artifact on the test surface.

16. A method as in claim 15, the map further showing shapes of the at least one high-order aberration or artifact on the test surface.

17. A method as in claim 1, wherein analyzing comprises:

transforming the light into electrical signals; and

processing the electrical signals to determine refractive power and the at least one additional ablation characteristic.

18. A method as in claim 17, wherein transforming the light comprises:

allowing the light to pass through a wavefront lens array; and

sensing the passed light with a light detection device.

19. A method as in claim 18, wherein the light detection device comprises a charge coupled device.

20. A method as in claim 18, further comprising adjusting at least one focusing lens disposed in a path between the test surface and the lens array to adjust the light before it passes through the lens array.

21. A method as in claim 17, further comprising using the electrical signals to generate an image approximately representing the test surface.

22. A method as in claim 1, wherein analyzing comprises:

measuring wavefront data pertaining to the light; and

using a reconstruction algorithm to generate a surface map of the test surface.

23. A method as in claim 22, wherein using the reconstruction algorithm comprises using one of a Zernike reconstruction algorithm and a Fourier reconstruction algorithm.

24. A method as in claim 1, further comprising adjusting the laser ablation system based on the refractive power and the at least one additional ablation characteristic determined during the analyzing step.

25. A method as in claim 24, wherein the at least one ablation characteristic comprises at least one of a quality and a shape of the ablated test surface.

26. A calibration apparatus for use with a laser ablation system, the laser ablation system capable of reshaping a surface by selective laser ablation of the surface, the calibration apparatus comprising:

a selectively laser ablatable test surface;

a light detection assembly;

a light source for passing light through the ablated test surface, towards the light detection assembly; and

a processor coupled with the light detection assembly for analyzing the detected light to determine a refractive power of the test surface and at least one additional ablation characteristic of the laser ablation system.

27. A calibration apparatus as in claim 26, wherein the test surface is positionable along a treatment plane, the treatment plane comprising a plane to which a laser is directed from the laser system to perform a reshaping procedure, and wherein the light

source passes light to the treatment plane, through the ablated test surface, towards the light detection assembly.

28. A calibration apparatus as in claim 27, wherein the test surface is fixedly positioned along the treatment plane while the test surface is ablated and light is passed through the test surface from the light source.

29. A calibration apparatus as in claim 28, further comprising a movable positioning device to which the test surface is coupled, wherein the positioning device is movable to position the test surface along the treatment plane.

30. A calibration apparatus as in claim 29, wherein the at least one positioning device is selected from the group consisting of a movable platform, a jointed arm, a rotating arm, a linear slide and a frame pivot.

31. A calibration apparatus as in claim 26, wherein the ablatable test surface comprises a lens.

32. A calibration apparatus as in claim 26, wherein the ablatable test surface comprises a plastic calibration member.

33. A calibration apparatus as in claim 26, wherein the light detection assembly comprises a wavefront sensor.

34. A calibration apparatus as in claim 33, wherein the wavefront sensor is selected from the group consisting of a Hartmann-Shack sensor, a Tscherning sensor, a ray tracing sensor, a shearing interferometer sensor, an amplitude grating sensor, and a pattern distortion measuring apparatus.

35. A calibration apparatus as in claim 26, wherein the light detection assembly comprises a charge coupled device for transforming the light into electrical signals.

36. A calibration apparatus as in claim 35, wherein the processor is coupled with the charge coupled device for analyzing the electrical signals to determine the refractive power and the at least one additional ablation characteristic.

37. A calibration apparatus as in claim 36, wherein the processor is further coupled with the laser ablation system for calibrating the laser ablation system based on the analysis of the electrical signals.

38. A calibration apparatus as in claim 26, wherein the processor comprises means for applying at least one of a Zernike reconstruction algorithm and a Fourier reconstruction algorithm to derive at least one surface map of the test surface from wavefront data measured by the light detection assembly.

39. A calibration apparatus as in claim 26, further comprising at least one adjustment lens disposed between the light source and the light detection assembly for adjusting at least one characteristic of the light.

40. A calibration apparatus as in claim 26, wherein the at least one additional ablation characteristic comprises at least one of a quality and a shape of the ablated test surface.

41. A calibration apparatus as in claim 40, wherein the quality comprises at least one of an high-order aberration and an artifact in the ablated test surface.

42. A calibration apparatus as in claim 41, wherein the processor generates at least one image of the ablated test surface, the at least one image showing the at least one high-order aberration or artifact.

43. A calibration apparatus as in claim 42, wherein the at least one image comprises at least one surface map of the test surface.

44. A calibration apparatus as in claim 41, wherein the processor generates at least one measurement of at least one high-order aberration or artifact.

45. A calibration apparatus as in claim 26, wherein the processor is coupled with the laser ablation system.

46. A calibration apparatus as in claim 45, wherein the processor automatically calibrates the laser ablation system, based on at least one of the refractive power and the at least one additional ablation characteristic.